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09/879,480	06/12/2001	Jack C. Whittier	HrdMgmtCIP	6452

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Santangelo Law Offices, P.C.
Third Floor
125 South Howes
Fort Collins, CO 80521

EXAMINER

MYERS, CARLA J

ART UNIT	PAPER NUMBER
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1634

MAIL DATE	DELIVERY MODE
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02/01/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/879,480

Applicant(s)

WHITTIER ET AL.

Examiner

Carla Myers

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28,30,31,33-40,45,46,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28,30,31,33-40,45,46,49 and 50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 10/31/07.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

Applicant's arguments and amendments to the claims set forth in the response of October 31, 2007 have been fully considered but are not persuasive to overcome all grounds of rejection. All rejections not reiterated herein are hereby withdrawn. This action is made non-final.

2. Claims 28, 30, 31, 33-40, 45, 46, 49 and 50 are pending and have been examined herein.

Declaration

3. The declarations under 37 CFR 1.132 filed October 31, 2007 are sufficient to overcome the rejections of claims 28, 30, 31, 33-40, 45, 46, 49 and 50 under 35 USC 102 and 103 over Erath et al (Journal of Animal Science. 2000. 78: 114) and Erath et al.(Proceedings, Western Section, American Society of Animal Science. 2000. 51: 441-443).

Priority

4. The subject matter of the present claims is entitled to priority only to the instant filing date of June 12, 2001. A claim as a whole is assigned an effective filing date rather than the subject matter within a claim being assigned individual effective filing dates.

The priority applications do not disclose the general concept of a method of managing female bovine mammals comprising each of the steps of managing a plurality of female bovine mammals for a reproductive factor, inducing early puberty in said plurality of female bovine mammals, inseminating substantially all of the female bovine mammals with sex-sorted spermatozoa, producing offspring comprising substantially all female offspring and harvesting substantially all of said plurality of female bovine mammals.

Response to Remarks:

In the response, Applicants state that the present invention is entitled to priority to provisional application 60/211,093, filed June 12, 2000. At pages 8-12 of the response, Applicants cite portions of the '093 application in support of their assertion that this application provides basis for the claimed invention. Applicants assert that while the prior Office action addressed some of the cited passages, the Office action failed to address the 8 disclosures on page 10 of the prior response or the 21 disclosures on page 9 of the prior response or the 5 additional passages at page 10 of the prior response. However, in the prior Office action, each of the cited passages was considered. While particular passages were discussed in detail (with such sentences reciting "for example"), this does not indicate that the Office action failed to address the 8 additional disclosures on page 10, the 21 additional disclosures on page 9, and the 5

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additional disclosures on page 10 of the prior response. To clarify, EACH of the cited passages in the present response and in the prior response have been FULLY reviewed. While each passage will not be restated herein, each passage was fully considered. However, the cited passages are not sufficient to establish support for the claimed invention to priority application '093. The individually disclosed concepts set forth throughout the '093 application do not provide support for the particular combination of steps and elements required by the present claims. FOR EXAMPLE, the response cites the teachings of "By early weaning calves from spring calving cows, the dams have the ability to increase BCS prior to winter and decrease cost of feed without detrimental effects on calf performance" (page 1); "Sexed semen is a relatively new technology that grants the IS ability to perpetuate the program using the female progeny of the initial heifers", "...AI using low dose sexed semen resulted in pregnancy rates in heifers that were 70-90% of unsexed traditional dose controls" (page 2); "Behavior and physiological indicators monitored puberty...", "Estrus synchronization of the EW heifers was accomplished...", "Heifers were AI'd following standing heat up to 72 hr...", "... fixed-time mating of all remaining pubertal heifers occurred", "A 45 d breeding period allowed heifers three opportunities to be AI", "The IS produces all female progeny to perpetuate the system in subsequent years by utilizing sexed semen..." (page 3); "...gains are attributed to adjusted feed rations to allow for gains that would induce early puberty", "Once the heifers began to cycle, the ratio was backed down to avoid over-fattening of heifers and possible negative impacts on subsequent reproduction/calving difficulty", "This induction of early puberty

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is contributed to nutrition allowing greater gain and weight of the EW heifers", "At time of PGF injection..." (page 4); "Heifers that became impregnated to sexed semen...", "...accomplished satisfactory gain performance of heifers which enabled induction of early puberty and resulted in 9 mo old heifers impregnated to sexed semen", "the opportunity for three services of AI may result in adequate overall pregnancy rate" (page 5); "...the IS may include early weaning, estrous synchronization, and AI", "Sexed semen can be utilized to yield female progeny", "...induce early puberty by 9 mo of age", "...greater gains and weights of heifers induced early puberty...", "...resulted in 9 mo old heifers pregnant to sexed semen" (page 8); and the separate teachings regarding induction of puberty including ("... faster gains resulting in younger puberty age", "Early puberty permits early insemination..." (page 2); "...gains are attributed to adjusted feed rations to allow for gains that would induce early puberty", "This induction of early puberty is contributed to nutrition allowing greater gain and weight of the EW heifers", "At time of PGF injection, the number of EW heifers cycling increased to 85% with only 7 heifers pre-pubertal" (page 4); "...accomplished satisfactory gain performance of heifers which enabled induction of early puberty..." (page 5); "...to induce early puberty by 9 mo of age", "... greater gains and weights of heifers induced early puberty" (page 8). These cited passages provide support for the individual concepts of a method of managing a plurality of females for an artificial insemination reproductive factor and for the concept of inducing early puberty in bovine. However, the individually disclosed concepts set forth throughout the '093 application do not provide support for the particular combination of steps and elements required by the present claims wherein the

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method requires each of the steps of managing a plurality of female bovine mammals for a reproductive factor, inducing early puberty in substantially all of said plurality of female bovine mammals, inseminating substantially all of the female bovine mammals with sex-sorted spermatozoa, producing offspring from substantially all female offspring, wherein the offspring comprise substantially all female offspring, and harvesting substantially all of said plurality of female bovine mammals after the step of producing offspring.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 28, 33, 39, 40, 46, 49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohenboken (Theriogenology. 1999. 52: 1421-1433; cited in

the IDS of 6/12/01) in view of Petit (1975; cited in the IDS of 6/12/01) and Hall (Journal of Animal Science. 1997. 1606-1611; cited in the IDS of 6/12/01).

Hohenboken teaches a method of managing a plurality of female bovine mammals comprising obtaining a plurality of female bovine mammals, managing the female bovine for a reproductive factor (i.e., managing the female bovine for their ability to reproduce), fertilizing at least one egg of said female bovine wherein fertilization is performed by artificial insemination using sex-sorted sperm, producing female offspring from said bovine female mammals, and harvesting said female bovine following the production of offspring (see abstract and pages 1426 and 1428). Hohenboken teaches that use of sex-sorted semen to produce only one heifer calf allows for only one parturition per female and that most cows would be slaughtered at a young age to produce consumer-acceptable beef without a maturity discount (page 1428). It is further stated that "(i)n a favorable marketing environment and under conditions allowing first parturition at a younger age, sexed semen would help to achieve profitable SSBH beef production" (see page 1428). Additionally, Hohenboken (page 1426) states that mating younger cows would have the additional advantage of reducing calving difficulty and increasing calf survival.

Hohenboken does not exemplify a method of inducing early puberty in order to allow for the fertilization of younger cows.

However, Petit teaches that heifers vary with respect to the start of their first estrus. It is stated that in heifers, providing an improved nutrition from birth onwards results in an early onset of estrus and an increase in weight gain (see page 158-159).

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Petit (page 172) teaches that inducing early puberty to produce early-maturing heifers is a means for managing animals so as to enhance their reproductive efficiency. For example, Petit teaches the use of early-maturing heifers in the "once-calved heifer system" to increase calf production and allow for harvesting of heifers at 2 years of age or earlier.

Additionally, Hall teaches inducing early puberty in heifers by causing a rapid weight gain then a slow weight gain for heifers at ages 6.5 months to 12.5 months (see for example page 1607). Hall teaches that inducing puberty is a means for managing animals so as to enhance their reproductive efficiency.

In view of the teachings of Petit and Hall, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hohenboken so as to have induced early puberty in the female bovines that were to be artificially inseminated in order to have achieved the advantage set forth by Hall of enhancing their reproductive efficiency and the advantages discussed by Hohenboken of reducing calving difficulty, increasing calf survival and providing female bovine that could be harvested at a younger age, thereby providing consumer-acceptable beef without a maturity discount and improving the effectiveness of the integrated system.

Regarding the recitation of inducing early puberty between about 250 to about 270 days after birth, Hohenboken does not teach inducing early puberty at about 250-270 days. However, Hall teaches inducing early puberty by about 9.5 months of age (i.e. "about" 270 days after birth). Petit (page 158) teaches that the time of first estrus varies with the breed of cattle, with Holsteins having their first estrus at 6 to 9 months,

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and hardy breeds of heifers having their first estrus early than beef heifers. It is stated that age of first estrus is influenced by the heifer's nutritional and environmental conditions. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have induced early puberty at an age of about 270 days after birth, depending on the breed of bovine, in order to have provided the most effective integrated breeding system. Further, to have determined the optimum time at which puberty is induced would have been obvious to one of ordinary skill in the art and well within the skill of the art. It is well settled that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also Merck & Co. v. Biocraft Labs. Inc., 874 F.2d 804, 809, 10 USPQ2d 1843, 1847-48 (Fed. Cir. 1989). In the present situation, the prior art teaches the advantages of inducing early puberty and teaches the parameters which allow for the induction of early puberty, including the choice of cattle breed and the nutritional and environmental conditions in which cattle are raised. Accordingly, optimization of the breeding system so as to have selected the optimum age at which female bovine reach their first estrus, including the ages of about 250 to about 270 days after birth, would have been obvious to one of ordinary skill in the art and well within the skill of the art.

Regarding claim 33, the combined references do not specifically teach inducing early puberty by feeding the female bovine a sufficient ration of feed to produce an average weight gain of about 1.2-1.4 kg/day. However, Petit teaches that an improved level of nutrition, and thereby weight gain, induces early puberty and Hall teaches that

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increased weight gain induces early puberty. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the amount of food given to the female bovine in order to have produced the most effective average weight gain, including an average weight gain of about 1.2 –1.4 kg/day, in order to have achieved the advantage of inducing early puberty. As discussed in MPEP 2144.05(b), "(w)here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.

In re Aller, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955).

Regarding claims 39 and 40, Hohenboken teaches that the female bovine should be harvested following the production of offspring, at an age in which the female bovine are about 24 months of age.

Regarding claim 46, the method of Hohenboken can be used to produce female offspring at a percentage of 70% female offspring, about 80% female offspring, or about 90% female offspring.

Regarding claim 49, Hohenboken (page 1428) teaches that the single-calf heifer system includes producing one calf prior to harvest and replacing the harvested female bovine.

Regarding claim 50, Hohenboken (page 1428) teaches that the method is one in which a female bovine produces offspring in a single parturition.

Response to Remarks:

In the response, Applicants traversed this rejection by stating that the claims have been amended to recite "inducing early puberty in substantially all of said plurality

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of bovine female mammals between about 250 days after birth to about 270 days after birth." Applicants state that Hall teaches inducing early puberty at 9.5 months of age and that using the interpretation that a month consists of 30.5 days, 9.5 months corresponds to 289.75 days. Applicants assert that 290 days is out of the latest date of Applicants' claimed range.

Applicants' arguments have been fully considered but are not persuasive. First it is noted that Applicants interpretation of what constitutes the length of a month does not take into consideration the 28 days in the month of February. Regardless of this interpretation, the disclosure in Hall of inducing early puberty at 9.5 months would still meet the limitations of the present claims of "about 270 days" since "about 270 days" is considered to include 290 days. The specification does not provide a definition for the term "about" which would lead one to conclude that "about 270" specifically excludes 290 days, 289 days, 288 days etc. Regarding the induction of early puberty, the specification (para [0043]) teaches that "In a beef cattle embodiment of the invention a female can be born, weaned at between about 95 to about 125 days, estrous synchronized at between about 250 to about 280 days, artificially inseminated, calve about 9 months later and be harvested prior to 24 months." The specification does not teach the criticality of inducing early puberty by day 270 or day 280 after birth and does not define the term "about" with respect to the age at which puberty is induced. Accordingly, there is nothing in the specification which indicates that inducing puberty at "about 270 days" does not include inducing puberty at 9.5 months, as taught by Hall.

Further, to have determined the optimum time at which puberty should be induced would have been obvious to one of ordinary skill in the art and well within the

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skill of the art. It is well settled that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *Merck & Co. v. Biocraft Labs. Inc.*, 874 F.2d 804, 809, 10 USPQ2d 1843, 1847-48 (Fed. Cir. 1989). In the present situation, Petit (page 158) teaches that the time of first estrus varies with the breed of bovine, with Holsteins having their first estrus at 6 to 9 months (i.e., using Applicants' 30.5 days as an average length of a month, 183 to 274.5 days), and hardy breeds of heifers having their first estrus early than beef heifers. It is stated that age of first estrus is influenced by the bovine's nutritional and environmental conditions. Additionally, as discussed above, the prior art teaches the advantages of inducing early puberty in the single calf heifer system and teaches the parameters which effect the age of first estrus, including the breed of cattle, and the nutritional and environmental conditions in which cattle are raised. Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have induced early puberty at a time of about 270 days after birth, depending on the breed of heifer, in order to have provided the most effective integrated breeding system. Optimization of the breeding system so as to have selected the optimum age at which female bovine reach their first estrus, including the ages of about 250 to about 270 days after birth, would have been obvious to one of ordinary skill in the art and the ordinary artisan would have had a reasonable expectation of success of effectively inducing early puberty at about 250 to about 270 days of birth given the guidance provided in the cited prior art.

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6. Claims 30 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohenboken in view of Petit and Hall, and further in view of Seidel (1997).

The teachings of Hohenboken, Petit and Hall are presented above. The combined references do not teach a method in which the quantity of sperm to be used for artificial insemination is no more than 3 million live, non-frozen sperm.

However, Seidel et al (page 1261-1262) teach a method which includes the steps of: a) producing a female bovine mammal; b) inseminating said female bovine mammal with a sample containing sorted sperm at a purity of about 90% for X sorted sperm; c) fertilizing at least one egg within the mammal; and d) producing an offspring mammal. Seidel teaches using $1-2.5 \times 10^5$ sorted live sperm for each artificial insemination. Seidel also states that the use of low doses of frozen semen show considerable promise for commercial applications (see page 1262).

In view of the teachings of Seidel, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hohenboken so as to have used live, non-frozen sperm in situations in which the sperm could be used immediately after sorting because this would have prevented any damage that may occur to the sperm during freezing and thawing, thereby improving the effectiveness of the artificial insemination method.

Regarding claim 45, the use of $1-2.5 \times 10^5$ sorted live sperm is considered to be less than 50% of a typical artificial insemination dosage of 10 million sperm.

Response to Remarks:

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In the response, Applicants traversed this rejection for the same reasons as stated in paragraph 5 above. Accordingly, the response to those arguments apply equally to the present grounds of rejection.

7. Claims 31 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohenboken in view Petit and Hall, and further in view of Seidel (1995).

The teachings of Hohenboken, Petit and Hall are presented above. The combined references do not teach a method in which the quantity of sperm to be used for artificial insemination is no more than 3 or 5 million frozen, thawed sperm.

However, Seidel (1995) teaches the effective insemination of heifers with thawed frozen sperm. The reference teaches that no differences were observed when using $1-5 \times 10^5$ versus 10×10^6 sorted sperm.

In view of the teachings of Seidel (1995), it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hohenboken so as to have used $1-5 \times 10^5$ thawed-frozen sperm because this would have provided a convenient means for performing the insemination procedure in which the sperm could be sorted and stored prior to its use for artificial insemination.

Regarding claim 45, the use of $1-5 \times 10^5$ sorted sperm is considered to be less than 50% of a typical artificial insemination dosage of 10 million sperm.

Response to Remarks:

In the response, Applicants traversed this rejection for the same reasons as stated in paragraph 5 above. Accordingly, the response to those arguments apply equally to the present grounds of rejection.

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8. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohenboken, Petit and Hall and further in view of Grimes (1991; cited in the IDS of 6/12/01).

The teachings of Hohenboken, Petit and Hall are presented above. The combined references do not teach do not teach early weaning of the female bovine.

However, Grimes (pages 468 and 471) teaches methods in which calves are weaned at 110 or 222 days. Grimes teaches that early weaned calves consumed less food and thereby provide an economic advantage. Grimes also teaches harvesting the animals prior to 24 months (Table 3). At pages 471, Grimes states: "Early weaning could be used in an integrated production system to expedite the finishing phase and to slaughter younger animals. It also could be used to accelerate development of females who are to be placed into the breeding herd, thus allowing these females to be bred younger."

In view of the teachings of Grimes, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the method of Hohenboken so as to have weaned the calves early, particularly after 110 days, in order to have provided the advantage set by Grimes of provide a more economical method for managing cows.

Response to Remarks:

In the response, Applicants traversed this rejection for the same reasons as stated in paragraph 5 above. Accordingly, the response to those arguments apply equally to the present grounds of rejection.

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9. Claims 36, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hohenboken, Petit and Hall and further in view of Deutscher (cited in the IDS of 6/12/01).

The teachings of Hohenboken, Petit and Hall are presented above. The combined references do not teach synchronizing estrus in the bovine prior to artificial insemination.

However, Deutscher teaches synchronizing estrous by dressing animal feed with 0.5 mg MGA for 14 days and injecting PGF at 19 days following the last MGA feeding (see page 165). The reference teaches that this method of synchronizing heifers results in an increased pregnancy rate (see page 164).

In view of the teachings of Deutscher, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Hohenboken so as to have synchronized estrous by dressing animal feed with 0.5 mg MGA for 14 days and injecting PGF at 19 days following the last MGA feeding order to have achieved the advantage set forth by Deutscher of increasing the pregnancy rates and thereby providing a more effective method for managing cows.

Regarding claim 36, modification of the method of Hohenboken so as to have induced early puberty at about 9 months and to have included the synchronization method of Deutscher would have resulted in a method in which artificial insemination and fertilization of at least one egg occurred between about 283 to 316 days after birth.

Response to Remarks:

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In the response, Applicants traversed this rejection for the same reasons as stated in paragraph 5 above. Accordingly, the response to those arguments apply equally to the present grounds of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carla Myers whose telephone number is 571-272-0747. The examiner can normally be reached on Monday-Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on 571-272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Carla Myers/

Primary Examiner, Art Unit 1634